

High-Performance Workplaces

Integrating Technology
and Architecture



PHOTO: COURTESY OF OLIVE WILKINSON ARCHITECTS AND DEGW

The office of JWT, an advertising agency in New York City.

By C.C. Sullivan and Barbara Horwitz-Bennett

Building Teams around the world are finding that the workplace is changing radically, leading owners and tenants to reinvent corporate office buildings to compete more effectively on a global scale. The good news is that this means more renovation and reconstruction work at a time when new construction has stalled to a dribble.

Much of the change is a result of the by the current recession, as *The Wall Street Journal* has reported. Corporate real estate managers are shrinking their firms' workstations and overall footprint in order to stay competitive and reduce overhead. But even more pertinent, says Andrew Laing, managing director of the workplace consultant DEGW, New York, is pure innovation in how office users get the job done. New terms such as activity-based work, along with co-working, mobile officing, and distributed workplace models, are being used to describe the brave new world of workplace.

"These are important trends that grew out of an urgent need to update our current conception of workplace—a change of mindset enabled by the latest mobile technologies," says Laing, adding that sustainability, global reach, and worker diversity are also driving the change. "The whole idea of work and

Learning Objectives

After reading this article, you should be able to:

- ✓ Describe the key drivers for today's office environments in terms of worker needs and work styles.
- ✓ Explain basic trends in office interior design, such as planning, layouts, and design.
- ✓ List the key technologies and materials for resolving office performance needs.
- ✓ Describe new workplace building products such as furnishings, flooring, and ceiling treatments.

workplace is being transformed. Now developers and designers of office buildings face enormous challenges in what they should provide to organizations and end-users.”

Berenice Boucher, a director with DEG W (www.degw.com), points to the forecast Worldwide Mobile Worker Population, by Framingham, Mass.-based marketing and analysis firm IDC. (For IDC’s definition of various types of mobile workers, see: http://www.workshifting.com/downloads/documents/IDC_MobileWorker_excerpt_0_0.pdf.) “According to the report, the worldwide number of mobile workers is projected to grow to 1 billion by year-end 2011, up from about 759 million in 2006,” says Boucher. The lion’s share of those mobile workers will be in Asia; other salient facts include:

- The United States has the highest percentage of mobile workers—68% in 2006, a figure that is expected to reach 73% in 2011.
- Western Europe has the second-largest mobile workforce (47.8%).
- Japan’s mobile workforce is increasing at the fastest rate (8.5% compound annual growth rate, 2006 to 2011), despite zero growth in workers.

For Building Teams, the challenge is to adapt office facilities to the new technologies and work styles as fast as possible. Adding pressure to this mandate are studies like the recently released U.S. Workplace Survey, conducted by Gensler, the largest U.S.-based architecture firm. Among its key conclusions: top-performing companies have significantly higher-performing work environments than average companies.

What this means, according to Gensler, is that workplaces must successfully support four main modes of working: focused work, collaboration, learning, and socialization. High-performance workplaces receive the best marks from employees on design elements such as layout, air quality, furniture comfort, storage, and privacy/access. When done right, the study concludes, employee ratings of the workplace features correlate directly with fundamental, bottom-line business measures of company performance and profitability. (For more on the study, see: http://www.gensler.com/uploads/documents/2008_Gensler_Workplace_Survey_US_09_30_2009.pdf.)

EFFICIENT AND EFFECTIVE

There’s no need to take Gensler’s word alone: Top corporate developers, architects, interior designers, and building owners agree that a highly functioning, supportive work environment is critical to employee success. Yet with a struggling economy and tightened budgets, corporations are simultaneously being forced to do more with less.

“With respect to resource efficiency, some of the latest trends that we’ve seen include reduction in rentable square footage, smaller office sizes and work spaces, and a heightened consideration of locating ancillary spaces off-site,”

observes Rick Focke, interiors director of design, HOK (www.hok.com), New York, N.Y. As a result, office layouts are evolving into smaller work areas and multiple-use spaces, using simpler material palettes. Focke and others also see many corporations opting to use furniture systems instead of walls for spatial boundaries, and some are treating structure as finish, thus eliminating additional materials and costs.

Jennifer Barnes, IIDA, a vice president with RTKL Associates (www.rtkl.com), Baltimore, has observed many clients opting to extend their leases in order to avoid relocation. “These clients come to us seeking added flexibility to accommodate a dynamic workforce,” says Barnes. “They seek dual-use spaces, hoteling stations, and more options for remote desktop capabilities.” The concept of hoteling—where employees who typically spend the majority of their work time on the road will reserve a workspace when they plan to be in the office—is not as new as activity-based work and co-working, but it seems to be gaining popularity again as corporations look to maximize resources.

Open vs. closed office spaces. Another by-product of the trend to conserve resources has been a reduction in closed, private office space in favor of more employees in open-plan areas using workstations and, increasingly, European table-style shared deskings. This is dovetailing with another trend: increased collaboration. Gensler’s recent survey, for example, found that people spend 32% of their work time collaborating with other others.

In fact, according to research led by Seattle-based environmental psychologist Judith Heerwagen, 80% of office interactions are unplanned and occur as a result of one employee being able to visually monitor the availability of another employee.

“Companies are shifting their occupancy away from individual spaces and putting some of the saved space into shared ameni-

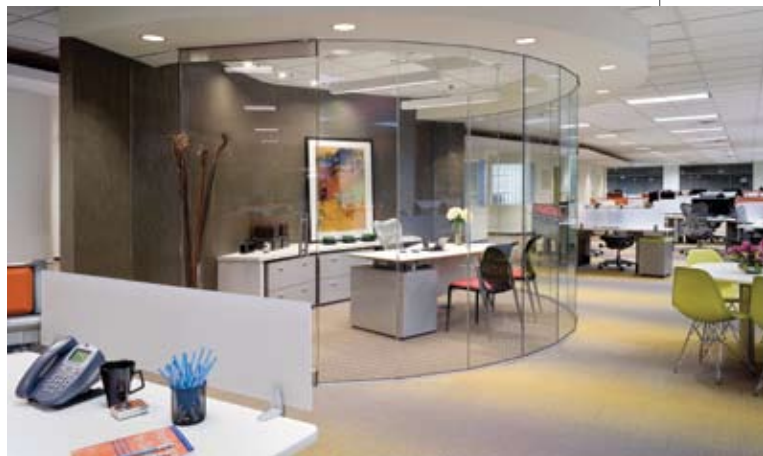


PHOTO: © PAUL WARCHOL

RTKL designed this office space for CoStar Group, a real estate information service headquartered in Bethesda, Md. Note the use of interior glass, and the open plan, to encourage teamwork.



PHOTO: COURTESY OF EWINGCOLE

ties such as break rooms, small break-out meeting rooms, and conferencing areas,” confirms Byron Edgmon, a senior vice president with global real estate owner, developer, and manager Jones Lang LaSalle (www.joneslanglasalle.com), Dallas.

HOK’s Focke says he is witnessing designs that take square footage away from lobby and reception areas in order to increase space dedicated to interactive and communal uses. Similarly, Kim Heartwell, AIA, a senior vice president in the Washington, D.C., office of RTKL, says, “Cafés and break areas have become the new meeting rooms, while workstations have become more community-oriented and modular in design.”

To support these changes, interior architecture is evolving. Designers more frequently suggest strategies such as glass office fronts and low workstation panels. As for opening up private office space, ideas include using lighter colors, increased

Direct pendants coupled with lighting controls in this EwingCole designed café for Delaware Investments, Philadelphia, offers users two levels of lighting in balancing task and ambient lighting.

The Latest in Corporate Convergence

Designers and owners of office buildings from low-rise to high-rise are also rethinking vertical transportation, both as an employee amenity and to provide greater accessibility. Among the latest technologies in the office elevator market are destination control systems, machine room-less (MRL) elevators, regenerating drives, and so-called twin elevators, where two elevators share a single shaft.

Destination control systems effectively group together passengers traveling to similar floor destinations. Building occupants and visitors input their desired floor into the control console and are then assigned a specific elevator cab. This results in improved operational efficiencies, fewer stops, and less waiting time.

Other destination control features include traffic forecasting, where the system predicts elevator traffic patterns based on historical data. These systems can also employ electronic identification badging, which records and accesses rider profiles with information such as frequent floor destinations or special needs.

MRL elevators are slowly but surely



PHOTOS: SCHINDLER ELEVATOR CORP.

Destination control systems save energy by grouping together passengers traveling to the same or nearby floors. They can also forecast elevator traffic, based on historical usage.

pushing aside traditional hydraulic elevators, which some major manufacturers are no longer producing. MRL elevators are designed with the elevator machine mounted right onto the hoistway, eliminating the need for a machine room on the roof. Some models also offer a gearless traction feature. Eliminating the need for oil, the technology offers up to 60% energy savings over conventional elevators.

Currently, it is estimated that 15-20% of all new elevators installed in North America have no machine room, but

Boonsboro, Md.-based elevator consultant David Mirch predicts that eventually MRL will completely replace hydraulic systems.

Regenerating drives also tap energy savings by essentially capturing and harnessing the elevator system’s braking energy. That power is then fed back to the building’s internal electrical grid and used for applications such as elevator lighting.

Developments in elevator standby mode include reduced fan power, signalization dimming, and LED lighting, all of which are aimed at reducing energy costs.



PHOTO: ERIK RANK, COURTESY OF DEG W

The new offices for GlaxoSmithKline's consumer operations in Parsippany, N.J., and in Weybridge, Surrey, U.K., combine R&D and marketing operations based on product type, such as toothpaste or smoking control.

daylight, and more plantings, as well as encouraging managers to leave their doors open—or remove them entirely, as ad agency JWT recently did for their New York City headquarters. In fact, the interiors designed by Clive Wilkinson Architects, Los Angeles, in consultation with DEG W, are radical in terms of openness and the use of novel collaboration spaces, which account for about half of the floor area.

Of course, workers also have a need for private space and

uninterrupted work time. Research shows that providing employees with ways to control interruptions will increase satisfaction and productivity. For example, studies by a leading office furniture manufacturer suggest the following design solutions:

- Using partition-like options for each workspace, such as movable screens or plants, which employees can utilize when they want to communicate an interest in not being disturbed.
- Including spaces where people can make private calls.
- Providing access to “quiet rooms,” where employees can escape noise and distractions or simply enjoy a change of environment.

Sustainability and health. In addition to balancing openness and privacy, the move toward healthy, green work environments remains a priority for office users, says RTKL's Barnes, a frequent presenter on workplace solutions at Neo-Con, the annual interiors conference (www.neocon.com).

Editor's Note

Additional required reading online! To earn 1 AIA/CES continuing education unit, complete the required reading and take the CEU test posted at www.bdcnetwork.com/article/442807-January_2010_AIA_CE_exam_High_Performance_Workplaces.php.

CORPORATE FACILITIES EDUCATION MODULE

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www.bdcnetwork.com/article/442807-January_2010_AIA_CE_exam_High_Performance_Workplaces.php to take this exam!



- Which country has the highest percentage of mobile workers?
 - Norway
 - The United States
 - Japan
 - Germany
- According to a national survey, high-performance workplaces must successfully support four main modes of working, which are:
 - Typing, reading, talking and listening.
 - Meetings, computer work, customer service, and telephone calls.
 - Office work, field work, labor, and manufacturing.
 - Focused work, collaboration, learning, and socialization.
- True or false: Psychologist Judith Heerwagen has concluded that 80% of office interactions are unplanned and occur as a result of one employee being able to visually monitor the availability of another employee.
 - True.
 - False.
- Office workers need private space and focused work time. Research shows that, to increase worker satisfaction and productivity, office environments should provide employees with:
 - White noise machines.
 - Office doors with glass panels.
 - Ways to control interruptions.
 - None of the above.
- With systems furniture moving from typical panel-based systems to more open, architectural furniture-based approaches, many office interiors now delineate spaces with:
 - Storage units and screens.
 - LED track lighting fixtures.
 - Workstations with half-height partitions.
 - Changes in floor finish.
- True or false: Churn rate refers to the turnover in space among office users, which in the U.S. office environment is currently in the range of 75% to 100%.
 - True.
 - False.
- Interior systems made from frame and gypsum, aluminum frame and glass, wood and glass, or similar combination are reconfigurable prefinished units, which often have a pre-installed track to accept hanging furniture systems such as work surface and overhead shelving, are called:
 - Preconstructed wall systems.
 - Workstations or cubicles.
 - Hoteling stations.
 - Mobile work infrastructures.
- Despite their sometimes higher upfront costs, sustainable flooring products such as linoleum, cork, bamboo, and carpet tile with recycled content enjoy a growing demand. The reasons for the increased demand include:
 - Favorable long-term replacement costs.
 - Reduced environmental impact.
 - Improved occupant health and comfort.
 - All of the above.
- In corporate office environments, suitable resilient finish materials for pantry areas, break rooms, and cafés requiring durable, easy-to-clean surfaces include:
 - Tile and broadloom carpet.
 - Wood plank, ceramic tile, and carpet.
 - Vinyl composition tile, solid vinyl tile or quartz tile, rubber tile, and linoleum sheet.
 - None of the above.
- Solutions to improve acoustics in open-ceiling workspaces include:
 - Acoustical ceiling panels.
 - Sound masking systems.
 - Free-floating hanging clouds, arcs, or canopies.
 - All of the above.

“Worker health and comfort are being addressed at a much broader level than ever before,” she says. “In addition to design considerations, clients are making a point to offer showers, bike racks, outdoor spaces, flexible technology, and the like to accommodate alternative transportation and employee lifestyles.”

The market for sustainable products has grown in step with this trend. For example, according to Melissa Mizell, IIDA, LEED AP, a senior associate in Gensler’s San Francisco office, specifiers can now easily find environmentally preferable wallboard, carpet tiles, flooring, and translucent resins—all with recycled content, and usually without a cost premium. Similarly, sourcing products locally or finding alternatives that emit zero or low levels of volatile organic compounds (VOCs) is now easier than ever. However, Mizell urges designers to specify verified sustainable products that actually live up to their claims of sustainability.

FURNISHINGS KEEP EVOLVING

Perhaps the most dominant trend in the world of office furnishings has been a noted reduction in cubicle area, while simultaneously opening up these spaces.

“The emerging trends that have penetrated the interior design furnishings market include more compact and efficient workstations, minimal panel heights, smaller furniture sizes, minimal casework, and less sizable storage provisions,” says HOK’s Focke.

According to Michael Rominske, director of interiors with Nadel Architects (www.nadelarc.com) in Torrance, Calif., this trend has been accompanied by a greater focus on the architecture of the space. “With systems furniture moving from typical panel-based systems to a more open, architectural furniture-based approaches, storage units and screens are now being used to delineate the space,” he says. He adds that using systems furniture which is more furniture-based allows the light to filter through to the workstations as the “sea of panels” can be eliminated for a more favorable stepped architectural look.

Another noteworthy trend is increased flexibility and ease of reconfiguration with personal workstations, private offices, and conference areas.

For instance, with workstations built from furniture-based components, in addition to the more traditional panels, individuals are able to move around their furniture to accommodate different tasks and work styles, according to Gayle Lane, IIDA, a principal at EwingCole (www.ewingcole.com), Philadelphia. “Workstation and private office furniture now respond to the individual’s needs for technology, storage, and work space as filing, piling, meeting, working with multiple computers, storage, and display of personal items have all been considered and accommodated,” she says. This has encouraged the development of new products such as innovative work surface shapes, drawers, wardrobe units, and storage elements and shelving in a variety of configurations.

For conference rooms, Lane, who has been designing office interiors for close to 35 years, is now seeing modular tables that gang in different configurations, in addition to folding, flipping, nesting, and rolling for storage. “Also available to complete the space are accessory items such as credenzas and podiums that allow for the integration of audio-visual and computer equipment,” she says.

Of course, the increased use of cutting-edge IT and telecommunications technology, including mobile devices and in-office tools like videoconferencing, plasma screens, and smart boards, has dramatically affected office infrastructure. “The most significant technology trend we are seeing is in videoconferencing—a technology that has improved dramatically,” says Jones Lang LaSalle’s Edgmon. “These high-end videoconferencing solutions are expensive, but compared to employee travel costs, they are worth it.”

Beyond videoconferencing (which DEGW and corporate end-users now call telepresence), the basic electrical, voice, and data services must be accommodated more effectively. Whether it’s power and data connections for easy laptop plug-in, smart phone recharging ports, or Internet connectivity in break rooms and touchdown spaces, such features are quickly becoming standard in today’s workplace.

Partitions and walls. For the division of office and shared spaces, two noted trends are demountable partitions and prefabricated walls, which have gained significant interest recently, says RTKL’s Barnes. “Demountable wall systems seem to be making a comeback, and the products themselves are more sophisticated and of better quality,” she says.

Beyond improved product quality, a major driver of the trends is the churn rate—the percentage of employees who move between work areas during a period of time, which is now in the range of 25% to 50%, according to Robert A. Flaynik, AIA, LEED AP, corporate practice director with EwingCole. This need for rapidly adapting building spaces has made flexible wall and partition systems a cost-effective option and long-term solution for maximizing workspace. Additional benefits, says Flaynik (tapping into his 20-plus years of experience in planning and designing corporate headquarters and workplaces), include increased transparency for better daylight penetration, improved sustainability, and the ability to integrate working walls, marker boards, sliding doors, tack boards, and environmental graphics.

JLL’s Edgmon points out that “demountables used to be three or four times more expensive than conventional drywall, but this gap has narrowed. Now, demountables are about double the cost of drywall, so if you move a partition once it has paid for itself.”

Similar to demountables are preconstructed wall systems, which can be made from frame and gypsum, aluminum frame and glass, wood and glass, or other such combinations. “They can be prefinished, and can come with a pre-installed track

to accept hanging furniture systems such as worksurface and overhead shelving,” says Barbara E. Cain, NCIDQ, LEED AP, a principal in the Pittsburgh office of Burt Hill (www.burthill.com). “However, use of these systems requires more up-front planning and design, as the ceiling heights must be set and hard construction cannot deviate from the plan. But they also provide the advantage of being reconfigurable.”

Beyond demountable and prefab walls, glass partitions also have an important place in the corporate interiors environment. In addition to providing sunlight penetration, transparency, and general aesthetic interest, Nadel Architects’ Rominske points out that privacy concerns can be addressed by using frosted or textured glass.

FLOORING OPTIONS EMERGE

Changes in wall systems, workstation configurations, and technological infrastructure are hardly the only major changes happening in today’s workplace. Take a look at flooring systems, for example. Broadloom carpet and vinyl flooring used to be the hands-down standards for heavily trafficked applications. Yet, this has evolved dramatically.

“The demand for sustainable products such as linoleum, cork, bamboo, and carpet tile with recycled content continues to grow,” says Burt Hill’s Cain, who has been designing office interiors for the past 30 years. “While the upfront cost for these materials tends to be slightly higher than their counterparts, the long-term replacement costs and lowered

A Primer on Office Flooring

Evaluating the pros and cons of flooring options for building needs is important for creating effective, robust office facilities. Whether the project is a headquarters or back office, Building Teams can benefit from the experience of seasoned experts in corporate environments. Gayle Lane, IIDA, a principal at EwingCole (www.ewingcole.com), Philadelphia, offers her firm’s in-house primer to guide specifications:

- **Lobbies** generally require high-visual impact, public safety concerns and high durability.
 - o Stone tile – High aesthetic value, high first cost, high installation cost, high maintenance cost (sealers and cleaners), high durability; thermal finish or polished surfaces with micro-etching addresses safety concerns.
 - o Porcelain ceramic tile – High aesthetic value, moderate first cost, high installation cost, low maintenance cost (mopping with detergent), high durability; thermal finish or polished surfaces with micro-etching address safety concerns.
 - o Terrazzo – High aesthetic value, high first cost, high installation cost, high maintenance cost (sealers and cleaners), high durability; slip-resistant finishes address safety concerns.
- **Office/workstations and conference/ meeting areas** require visual interest, acoustical privacy, and high durability.
 - o Carpet tile – Moderate to high aesthetic value (incredibly large variety of options available to suit aesthetic requirements), moderate first cost, low installation cost, low maintenance cost (regular vacuuming and cleaning), high durability (selective replacement can increase life span).
 - o Broadloom carpet – Moderate to high aesthetic value (incredibly large variety of options available to suit aesthetic requirements), moderate to low first cost, moderate installation cost, low maintenance cost (regular vacuuming and cleaning), moderate durability.
- **Executive reception/conference/office** require high visual interest and moderate durability.
 - o Wood flooring – High aesthetic value, moderate to high first cost, high installation cost, high maintenance cost (sealers and cleaners), moderate durability.
 - o Broadloom carpet (see above).
 - o Stone tile (see above).
- **Pantry/break room areas** require visual interest, high durability, and regular cleaning.
 - o Vinyl composition tile – Low aesthetic value (installation in patterns can enhance appearance), low first cost, low installation cost, high maintenance cost (regular cleaning and polishing), high durability (polishing creates wear layer).
 - o Solid vinyl tile/quartz tile – Moderate aesthetic value (installation in patterns can enhance appearance), moderate first cost, low installation cost, low maintenance cost (mopping with detergent), high durability.
 - o Linoleum sheet – Moderate aesthetic value (large variety of colors and patterns available), moderate first cost, moderate installation cost, moderate maintenance cost, high durability.
- **Restrooms** require visual interest, high durability, regular cleaning, and water and slip resistance.
 - o Linoleum/vinyl sheet, heat-welded seams – Moderate aesthetic value (large variety of colors and patterns), moderate first cost, high installation cost, moderate maintenance cost, high durability, additional slip-resistant finishes can be applied.
 - o Porcelain ceramic tile – High aesthetic value, moderate first cost, high installation cost, low maintenance cost (mopping with detergent), high durability, thermal finish or polished surfaces with micro-etching addresses safety concerns.
 - o Ceramic mosaic tile – Moderate aesthetic value, low first cost, high installation cost, low maintenance cost (mopping with detergent), high durability.

environmental impact allow them to be viable options. And as the demand and production for these products increases, it is anticipated that costs will trend downward.”

In terms of specific sustainable attributes, linoleum is considered natural because it is made from renewable resources. Cork is classified as a rapidly renewable resource because the bark of the tree from which it is taken grows back in about nine years. Bamboo is available for harvesting in about three years, not to mention the fact that it doesn't require replanting and needs only minimal fertilization.

However, some building professionals are skeptical about bamboo's green qualities. For example, Todd Fratzel, PE, principal engineer with United Construction Corporation (www.unitedconstruction.biz), Newport, N.H., points out that most bamboo flooring products contain formaldehyde binders. Bamboo is also predominately grown in the Far East, so it requires overseas transportation. Last, the plant's bamboo's popularity is causing the clear-cutting of old-growth forests to make room for new bamboo stands.

As for carpeting, some new products use biobased materials, while others offer various levels of pre- and post-consumer recycled content. One advantage offered by carpet tiles is that much less material is wasted per installation due to the small, modular size of the tiles. “While initially more expensive than broadloom, carpet tiles are commonly being used due to maintenance [advantages],” says Rominske. “Also, having an attic stock allows for the changing of tiles and keeps a facility looking new. Additionally, they contribute to LEED points and can be used as design elements.”

Beyond carpet, Barnes has seen modular flooring systems growing in popularity due to their flexibility, long-term value, and the expanding market offerings, with several high-quality finish options. To evaluate the pros and cons of different flooring options for varying spaces, EwingCole's Lane offers the firm's in-house primer to guide choices in lobbies, offices, executive suites, meeting areas, and break rooms:

- **Lobbies.** These public zones generally require high visual impact while also addressing public safety concerns and durability needs. Options include stone tile, porcelain ceramic tile, and terrazzo.
- **Offices, workstations, and meeting areas.** With intermittent daily traffic, these spaces need to provide visual interest and good performance in terms of acoustical privacy and durability. Typical specifications: carpet tile and broadloom carpet.
- **Executive reception areas, conference rooms, and offices.** The corner office may not look like the mahogany foxholes of yore, but they still require a special level of visual interest and sophistication, as well as moderate durability. Good options: wood flooring, broadloom carpet (including real wool), and stone tile.

- **Pantry areas, break rooms, and cafés.** Along with



PHOTO: COURTESY OF CLIVE WILKINSON ARCHITECTS AND DEGWI

Unusual interior wall treatment at JWT advertising agency in New York signals a “green” message to clients, while offering privacy.

espresso bars and other foodservice amenities comes a demand for special flooring products. Again, visual interest is important, as is durability and ease of cleaning. Options include vinyl composition tile, solid vinyl tile or quartz tile, rubber tiles, and linoleum sheet.

- **Restroom areas.** Whether for visitor use or employees only, restrooms require visual interest, excellent durability, and the ability to tolerate regular cleaning while remaining water- and slip-resistant. Linoleum and vinyl sheet, porcelain ceramic tile, and ceramic mosaic tile are standard options for these utilitarian spaces.

(For more details from Gayle Lane, see “A Primer on Office Flooring,” p. 28.)

- **Raised floors.** Another important floor-related trend is the use of raised floors with underfloor air delivery, sometimes called UFAD. While the environmental benefits of these systems are significant, their first cost tends to be higher than those for conventional flooring assemblies. “Considerations should be made relative to flexibility and how this relates to the overall goals for LEED for air distribution, ventilation, and controls, as well as electrical and data [supply],” advises Joyce Fownes, RID, LEED AP, a principal in the Atlanta office of Perkins+Will (www.perkinswill.com), referring to the U.S. Green Building Council's LEED rating system.

On the plus side, labor and materials costs will be reduced for the underfloor electrical and data changes, she notes. At the same time, other important considerations include subfloor leveling integrity, ADA and accessibility ramps, and steps and interface with the exterior window wall. Aesthetic considerations are often addressed with carpet tile.

CEILING TREATMENTS MULTIPLY

In today's corporate office environment, there's more for the ceiling than the standard dropped ceiling with lay-in acoustical tiles, although that solution does remain the norm for corporate interiors, according to Burt Hill's Cain. In recent years, product lines have expanded to offer ceiling treatments with increased visual interest that can also integrate MEP building systems such as HVAC, lighting, sprinklers, and audio speakers into a single highly compact "technical zone." The benefit of this approach is that the rest of the ceiling plane is left uncluttered.

According to Focke, in tight urban settings like New York City and even in many suburban office locations, "There is a gravitation toward more open ceilings, taking advantage of ceiling heights with the capacity to absorb lighting and fire-protection equipment."



Interior treatment by Clive Wilkinson Architects and DEGW is designed encourage collaboration among the creative types at ad agency JWT .

At the same time, acoustics can be a problem with open ceilings. One approach, says Cain, is to utilize free-floating hanging clouds, arcs, or canopies to assist with sound absorption. Jones Lang LaSalle's Edgmon likes to go with a high-performance acoustical ceiling, along with sound masking or white-noise systems, especially with spaces trending toward openness and collaboration. Whereas "high-end" used to mean drywall, Edgmon sees this as changing. Nowadays, lay-in wood, acoustical panel systems, and stretch fabric systems are considered good choices for dealing with sound and accessibility issues.

In terms of flexibility, RTKL's Heartwell highly recommends modular systems—without, however, advocating a one-size-fits-all approach. Rather, she says, it's important to "pick a system based on lighting fixtures, acoustics of the space, ductwork, and other factors, as ceiling systems will differ based upon the space type."

For materials selection, typical system ceiling choices include mineral fiber and fiberglass acoustical ceiling tiles as well as linear, plank, and tile grids with wood and metal finish panels. EwingCole's Lane summarizes the pros and cons of each of these selections:

- *Drywall* – High aesthetic value, high first cost, moderate maintenance cost (areas around access panels must be repaired and repainted), and limited acoustical attenuation. Lighting and other devices can be organized and placed almost anywhere.
- *Mineral fiber acoustical ceiling tiles* – Low to moderate aesthetic value, low to moderate first cost, and low to moderate acoustical qualities. Maintenance costs are low to moderate—some suspension systems can be more difficult to access, while some ceiling tiles are more easily damaged and require more frequent replacement. Lighting, sprinklers, smoke detectors, speakers, and other utilities can be fully integrated into systems available from certain manufacturers.
- *Fiberglass acoustical ceiling tiles* – Moderate aesthetic value, moderate to high first cost, low maintenance costs, and high acoustical qualities. Lighting, MEP, and audiovisual systems can be fully integrated, depending on the system manufacturer.
- *Wood linear, plank, and tile ceilings* – High first cost and low maintenance costs, depending upon the degree of accessibility. With moderate to high aesthetic value, these products can range from typical acoustical ceiling tile modules to a completely custom installation. The products offer low to moderate acoustical qualities—tiles and planks can be perforated for noise attenuation, and all can be installed with acoustical material above.
- *Metal linear, plank, and tile ceilings* – Low to high aesthetic value (ranging from typical acoustical ceiling tile modules to a completely custom installation), low to high first cost, low maintenance costs (depending upon degree of accessibility), and low to moderate acoustical qualities. These tiles and planks can also be perforated and can accept acoustical material.

PHOTO: COURTESY OF CLIVE WILKINSON ARCHITECTS AND DEGW

LIGHTING THE NEW WORKPLACE

Driven by stricter energy codes, standards, and evolving requirements for LEED, Green Globes, and other sustainability ratings, office interiors are seeing an increased focus on task lighting, lighting control systems, and fixtures using light-emitting diodes (LEDs). “New energy-efficiency requirements and industry standards have encouraged designers to be more stringent as they calculate lighting needs,” says RTKL’s Barnes. “Because of this, we’re seeing more variation in lighting levels and greater use of task lights.”

Jones Lang LaSalle’s Edgmon says the lighting industry is responding with more creative, cost-effective light fixture styles and designs. In fact, many fixtures can provide more lumens per watt than previous models while using only two lamps, rather than three or four. The increased efficiency is the result of higher reflectivity fixture housings as well as better lamp technology, he notes.

Advanced control systems—from occupancy sensors to daylight sensors to zoning systems—are being specified for both general and task lighting as a means to address energy requirements. To capitalize on even greater efficiencies, Mary Alcaraz, PE, LC, CEM, LEED AP, a principal with EwingCole, Philadelphia, recommends coupling lighting controls with T5 fluorescent indirect/direct pendants and recessed luminaires and volumetric luminaires. “This gives users at least two levels of lighting, one of which can be task lighting,” says Alcaraz, while automatically turning off electric lighting when not needed. Such a system can be paired with automated window shading systems to take advantage of natural daylight, she notes.

Burt Hill’s Cain stresses the importance of designing for daylighting, suggesting screens or semi-opaque shades as strategies to enable natural light and views while controlling glare and heat gain.

Although the technology is still developing, LEDs are now being used for task lighting and supplemental lighting, offering high energy efficiencies and limited heat discharge. Down the line, says Alcaraz, a frequent industry presenter and author on lighting-related topics, Building Teams should anticipate manufacturers of LED fixtures introducing new office lighting luminaires, although she cautions designers to evaluate these systems carefully as they come to market.

SURFACES, FABRICS, AND FINISHES

Another materials category integral to successful workplaces is finishes. Beyond visual appeal and functionality, says Nadel Architects’ Rominske, “There has been a huge shift in manufacturers providing sustainable materials and finishes for almost any application.”

RTKL’s Heartwell concurs. “Sustainability has taken hold of the finishes market,” she says. “Every vendor is out there promoting their sustainable product lines.” The challenge for

Building Teams is to distinguish real green advantages from hype or obfuscation.

Leading the way in terms of unique environmental benefits are acrylic-based screens and materials, as well as quartz and other solid surface materials, according to Rominske. In lobbies and reception areas, Barnes has observed a tendency to use regional materials, both for sustainable design reasons but also to lend an authentic regional aesthetic to otherwise generic corporate surroundings. “Because it can be difficult to get a glossy finish from sustainable materials such as low-VOC paints and sealers, there seems to be a ‘celebration of the organic,’” she says.

As for wood, rare and exotic species are out of favor, while salvaged and reclaimed wood is in, thanks to the green movement. Moreover, the latest generation of water-based polyurethane finishes, particularly for high-traffic office areas, offers fast-drying properties, strong performance, and low VOC levels.

Beyond these newer trends, Cain still sees classic finishes such as metal, stone, and ceramics as playing an important role in the market on account of their quality and durability, two attributes that play well in the corporate interiors market.

WORKPLACES THAT WORK BETTER

The ongoing economic recession is forcing Building Teams to think even more creatively about how office interiors can respond to economic conditions and, in a curious way, creating an exciting time for workplace interiors. Fundamental changes, such as the new open-plan environments and the integration of mobile work technologies, are the first big step. The next big hurdle is to document the real benefits of better workplace facilities in terms of productivity, occupant satisfaction, and even such measures as customer acquisition and product development.

According to DEGW’s Laing, novel office strategies can lead to quantifiable improvements in organizations. As one example, he points to pharmaceutical maker GlaxoSmith-Kline’s new consumer product hubs, which bring R&D scientists and marketing teams into close proximity. By integrating workplace design with the highest level of corporate strategy, the client has recorded specific, measurable improvements, including 45% faster decision making, 67% less daily time loss, and a 17% boost in perceived responsiveness to market. Not only that, but GlaxoSmithKline also now enjoys a more sustainable facilities program, based on such measures as square footage per employee.

Any workplace can make a positive contribution, say leading practitioners. Yet, between new technologies, expanded product options, and the trend toward more open, collaborative spaces, Building Teams are under pressure more than ever to innovate on behalf of workplace users. Ultimately, the best work means interesting, innovative, and attractive spaces where today’s corporate talent can best thrive. **BD+C**